Collider –Accelerator Department Machine Advisory Committee
21-23 September 2015 Meeting (MAC-12)

Charge

The design of eRHIC, which has been going on for the past 15 years, considering both ring-ring and linac-ring options. The current eRHIC design based on an electron ERL colliding with RHIC beams covers the entire center-of-mass energy range of the Electron Ion Collider (EIC) and aims for the highest possible luminosity. Work on the ring-ring design is being pursued as an alternative with lower technical risk.

The Nuclear Science Advisory Committee (NSAC) has an Electron Ion Collider (EIC) under consideration. Our goal is that eRHIC will be selected to be the Electron Ion Collider. Recently an EIC costing committee chaired by Ed Temple reviewed the eRHIC (BNL) and MEIC (JLab) designs. The committee determined that "Of the uncertainties that remain, the subcommittee considers the dominant ones to be technical."

We ask you to review the technical aspects of the current design of the eRHIC electron-hadron collider and alternative designs aimed at a lower cost and risk, and with a possible staging of luminosity. We ask you to evaluate the designs' ability to provide the required performance, their potential technical risks, consider possible showstoppers and suggest potential solutions for problems. We also ask you to comment on the choices of the design parameters and comment on the program of R&D to mitigate the risks.

It is requested that a concise report responsive to this charge be forwarded to the C-AD Chair, Thomas Roser, by 22 October 2015.